



Bathgate A. B.  
5 Dec. 1871

My dear De Rance.

Many thanks for your letter & its enclosure. The succession of Swedish Drifts is what I had already gathered from various sources - but it is exceedingly nice to have it confirmed. You do not say where the extract is taken from. Will you some time kindly let me know. One gets buried in the country time lost to libraries. I have for some time been gathering up all I can from foreign sources as to succession of drifts and I find a wonderful agreement. The Scotch succession is the same in Switzerland, Scandinavia, Denmark, Germany, Russia & North America! In another paper in the Mag. I will give a brief digest of the results. I cannot help thinking that your upper & lower B Clay series with the Middle Sand series all belong together to

| Sketch                 | Swedish                | St. Maurice  | ? English                               |
|------------------------|------------------------|--|---|
| 1. Ill-distr. beds.    | 1. Clay with stones    | 1. Unmodified drift<br>with pebbles<br>of sand, silt, clay, etc. | 1. Boulders clay &<br>intercalated with |
| 2. Horizons            | 2. ? (not unpaired)    | 2. Horizons  | 2. ?                                    |
| 3. Lenses              | 3. Lenses              | 3. Gravels lenses  | 3. Sand & gravel with<br>lenses of mud  |
| 4. Shelly clay: Snails | 4. Shelly clay: snails | 4. Snails  | ?? shelly clay                          |
| 5. Moraines            | 5. Moraines            | 5. Moraines  | 5. Moraines                             |

This is a rather incoherent note - but I write in haste. I am much obliged continuing for your confirmation of my views (the general horizon from the gravel horizon down to the sandbank. B. Clay & Middle Sands may all be older than the lenses & therefore the equivalent of No. 1

Yours sincerely Ja. Fiske

the period of the Till - that is to say that they represent the Scottish Till & interglacial deposits. I think it is almost certain that they are all of older date than the Kame Series of Scotland & over of Scan.

Dinaria. I would say the same of Banks Wood Drifts on the other side of England - they are all of older date than the Kames & therefore must be the equivalents of the Scottish Till & interglacial beds. It is a Utopian notion to attempt to correlate ~~these~~ each bed separately with some other bed in some other district of the country. Your Lancashire bed need not be the exact equivalents, bed for bed, of Banks Wood Drift, and yet at the same time may be the equivalents of the Scottish Till. Marine B. Clays might be depositing in one place while land till was gathering in another. I cannot believe that any English B. Clay whatever represent the erratics & later moraine drift which are scattered over the tops of the Scottish Kames. After the Kame period the Scottish glaciers were never more than small insignificant affairs quite innocent of the manufacture

B. Clay - they scattered some angular debris & big erratic - that is all. Is it possible that the English local glaciers were any greater? Our succession beginning with

the oldest is as follows:-

- 1 Till with subjacent & intercalated beds sand, silt, clay & gravel.
- 2 Moraines (much denuded)
- 3 Kames-series
- 4 Brick clays & Erratics
- 5 Later Moraines

No. 2 represent the rubbish (terminal moraines) left behind as the land was drawn by the ice sheet. I believe them to be terminal: which implies that the land did not subside until the ice had withdrawn from the low grounds. No. 3 is made up of No. 2 and No. 1. and the deposit of during subsidence = mild period.

No. 4 indicates return of cold conditions & were deposited during the rise of the land. The erratics always rest upon & never occur in the Kames - but are frequent in the shelly brick-clays. The later moraines No. 5 indicate final retreat of the glacier. I should mention that the brick clays graduate up into deposits with shells same as in adjoining seas.

GEIKIE (James, F.R.S., prof. geol., Edin., brother of the above, 1839-1915) A.L.S. (JAS. GEIKIE),  
Bathgate N.B., 5 Dec. 1871, to 'My dear De Rance', 4 closely written pages 8vo., £1, 10s

An important letter on the geological question of Drifts, and the Interglacial Period. . . . 'I have for some time been gathering up all I can from Foreign Sources as to the succession of Drifts and I find a wonderful agreement. The Scotch succession is the same in Switzerland, Scandinavia, Denmark, Germany, Russia and North America ! . . . I cannot help thinking that your upper and lower B Clay must with the Middle Land series all belong together to the period of the Till—that is to say that they represent the Scottish Till & interglacial deposits.' **LONDON SOTHERAN**

*asking his correspondent to present him to M. Dacier, Secrétaire Perpetuel de l'Institut, to give  
opinion on a Buddhist MS., entrusted to him, £1, 5s*

5714 — A.L.S., 24 7bre, à M. le préfet, 1 page 8vo., 15s

.... 'Je suis retenu à la chambre par des Coliques qui me font beaucoup souffrir par ces temps cy.' . . .

5715 — RAPPORT sur les SOLUTIONS de PROBLEMES proposés pour le mois de Ventose an 5<sup>e</sup> [1]

ÉCOLE POLYTECHNIQUE · a MS. on 2 pp. folio · signed · Paris 26 germinal an 6 Rep. Hack